A1-A01-A02-A03 series

Industrial controls

Distinctive features

The A01 and A02 series offer ranges of:

- pushbutton switches, illuminated or not
- indicators
- 2 or 3 position keylock switches
- 2 or 3 position rotary lever switches
- emergency stop switches

with rectangular, square or round operators.



- Custom engraved aluminium pushbutton switches, A1 series
- Switch enclosures
- Pushbutton switches and indicators, A03 series
- ☐ Environmental protection: IP65
- □ Modular construction
- ☐ Electrical life: 50.000 cycles min.
- Screen engraving or insertable legends on request
- □ Approvals





BS RIA 20 Shock & Vibration





EN 61058-1





Each sub-assembly has to be ordered separately.

A01 - A1 - A03 series

- Panel cut-out :
 - Ø 16 mm (.630), except:
 - flush mount round : Ø 22 mm (.866)
 - flush mount rectangular : 20.60 x 26.70 mm
 - flush mount square: 20.60 x 20.60 mm
 - A1 series : Ø 22 mm (.866)
 - A03 series : round or square Ø 22 (.866) flush mount : Ø 30 mm (1.378)
- 1, 2, 3 and 4 poles
- Solder lug/quick-connect terminals
- Contacts: silver, gold plated
- Current/voltage rating : 6A 250VAC max. - 10mA 5VAC min.
- Lamp: filament, neon or LED

A02 series

- Panel cut-out :
- round or square : Ø 22 mm (.866)
- rectangular : 29,5 x 21,5 mm (1.160x.846)
- flush mount : Ø 30 mm (1.378)
- 1 and 2 poles
- Screw terminals (optional: quick-connect term.)
- Contacts: silver
- Current/voltage rating : 12A 380VAC 16A 250VAC max. 25mA 5VAC min.
- Lamp: filament, neon, LED or special multi-LED array

Option: end cap terminal guard. Order separately

(see end of A02 series).

A1: 25 pieces - A01: 20 pieces (except pushbuttons: 25 pieces) - A02: 25 pieces - A03: 10 pieces.

Dimensions: first dimensions are in mm while inches are shown as bracketted numbers.

A1-A01-A02-A03 series

Industrial controls

Specifications for pushbutton, keylock and rotary switches

ELECTRICAL SPECIFICATIONS

• Function :

• Current/voltage rating :

Contact gap

• Initial contact resistance :

• Insulation resistance :

• Dielectric strength :

• Electrical life (resistive load) :

• Insulation :

• Lamp life :

• Lamp circuit diagrams

• Min. mechanical life:

• Operating temperature :

• Solder heat resistance :

protection (IEC 529)

• Switch terminals :

• Lamp terminals :

(IEC 68-2-20Tb, method 2)
• Degree of environmental

Panel thickness

• Lamps :

A01 - A1 - A03

Momentary or maintained action

10mA 5VAC min. 6A 250VAC max. - 6A 12VDC max.

> 1 mm (.039)

 $10m\Omega$ max. at 1A 4VDC

50 MΩ min.

750V between open contacts 5KV live to accessible

50.000 cycles

Class 2

LED: 60.000 h min. to 75% relative luminosity - Filament: approx. 5.000 h Neon: approx. 10.000 h

A02

Momentary or maintained action

25mA 5VAC min. 12A 380VAC - 16A 250VAC max. 12A 12VDC max.

Double break $2 \times 1.5 \text{ mm}$ (.059)

 $10m\Omega$ max. at 1A 4VDC

50 MΩ min.

2KV between open contacts 4KV live to accessible

50.000 cycles

Class 2

LED: 60.000 h min. to 75 % relative luminosity - Filament: approx. 5.000 h Neon: approx. 10.000 h



GENERAL SPECIFICATIONS

A01 - A1 - A03

Pushb. momentary: 1 million cycles Pushb. maintained: 100.000 cycles Keylock and rotary: 100.000 cycles

8 mm (.315) max.

-20°C to +55°C

350°C, 5 sec.

IP 65 front of panel IP 40 back of panel

Midget Grooved T13/4, filament, LED or neon

Solder/quick-connect 2,8 mm (.110)

Solder/quick-connect 2,8 mm (.110)

A02

Pushb. momentary: 1 million cycles Pushb. maintained: 100.000 cycles Keylock and rotary: 100.000 cycles

8 mm (.315) max.

-20°C to +85°C

350°C, 5 sec.

IP 65 front of panel IP 40 back of panel

Midget Grooved T13/4, filament, LED or neon Special multi-LED array

M3 screws - wire $2 \times 0.75 \text{ mm}^2 \text{max}$.

M3 screws Flexible wire 2 x 2,5 mm² max. Rigid wire 4 mm² max.

Specifications for emergency stop switches: see pages 10 and 22.

For screen engraving or film legends, contact APEM.

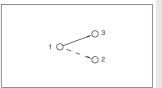
G

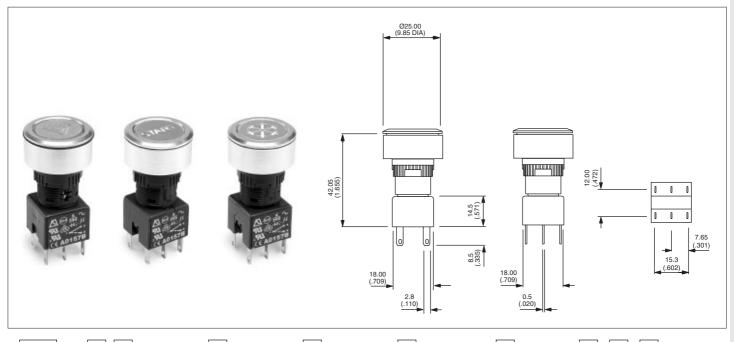
Engraved aluminium flush mounting pushbuttons and indicators

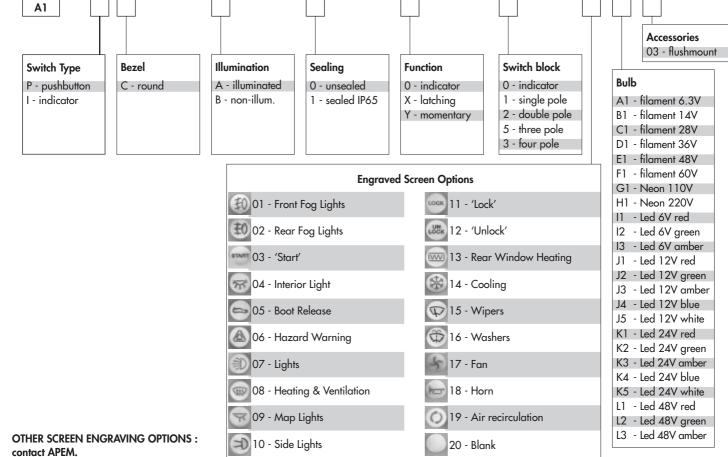
Panel cut-out Ø 22 (.866)

A pushbutton assembly requires:

engraved screen + lamp (if illuminated) + operator + switch block + flush mount bezel. To order these elements, select desired model numbers from the table below. **Example**: pushbutton, round, illuminated, sealed to IP65, latching, single pole with "start" engraving, 24V blue LED and flush mounting bezel = A1PCA1X103K403.







APEM www.apem.com

Illuminated or non-illuminated pushbutton switches

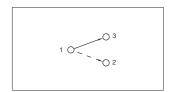
Panel cut-out Ø 16 (.630)

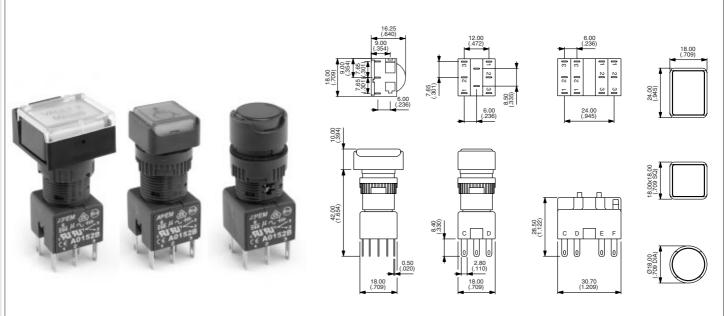
A pushbutton assembly requires:

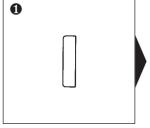
screen + lamp (if illuminated) + operator + switch block.

To order these elements, select desired model numbers from tables below.

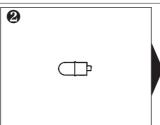
Example: IP65 rectangular pushbutton, single pole, maintained, red screen and 12V red LED = A0161B, A0142M1, A0101X and A0151BUL.



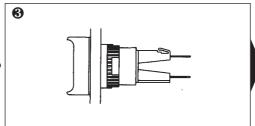




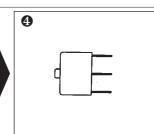
Screen



Lamp



Operator



	Bezel	Colour	Part No
		black	A0161A
		red	A0161B
١		amber	A0161C
ı	=	yellow	A0161D
7		green	A0161E
		green blue	A0161F
		clear	A0161G
		white	A0161J
		black	A01613
		red	A0162B
		amber	A0162C
		yellow	A0162D
		green	A0162E
		blue	A0162F
		clear	A0162G
		white	A0162J
	0	black	A0163A
	0	red	A0163B
	0	amber	A0163C
	0	yellow	A0163D
	0		A0163E
	0	green blue	A0163F
	-	DIOC	AUTUSI

white

Lamp	Voltage	Part No
Filament	6.3V	A0141A
Filament	14V	A0141B
Filament	28V	A0141C
Filament	36V	A0141D
Filament	48V	A0141E
Filament	60V	A0141F
Neon	110V	A0143G
Neon	220V	A0143H
LED	6V red	A0142L1
LED	6V green	A0142L2
LED	6V amber	A0142L3
LED	12V red	A0142M1
LED	12V green	A0142M2
LED	12V amber	A0142M3
LED	12V blue	A0142M4
LED	12V white	A0142M5
LED	24V red	A0142N1
LED	24V green	A0142N2
LED	24V amber	A0142N3
LED	24V blue	A0142N4
ED	24V white	A0142N5
LED	48V red	A0142P1
LED	48V green	A0142P2
LED	48V amber	A0142P3

Pole	Bezel	Description	Part No
1 or 2		Illum, momentary	A0101Y
1 or 2		Illum, maintained	A0101X
1 or 2		Non-illum, momentary	A0102Y
1 or 2		Non-illum, maintained	A0102X
3 or 4		Illum, momentary	A0103Y
3 or 4		Illum, maintained	A0103X
3 or 4		Non-illum, momentary	A0104Y
3 or 4		Non-illum, maintained	A0104X
1 or 2		Illum, momentary	A0105Y
1 or 2		Illum, maintained	A0105X
1 or 2		Non-illum, momentary	A0106Y
1 or 2		Non-illum, maintained	A0106X
3 or 4		Illum, momentary	A0107Y
3 or 4		Illum, maintained	A0107X
3 or 4		Non-illum, momentary	A0108Y
3 or 4		Non-illum, maintained	A0108X
1 or 2	0	Illum, momentary	A0109Y
1 or 2	0	Illum, maintained	A0109X
1 or 2	0	Non-illum, momentary	A0110Y
1 or 2	0	Non-illum, maintained	A0110X
3 or 4	0	Illum, momentary	A0111Y
3 or 4	0	Illum, maintained	A0111X
3 or 4	0	Non-illum, momentary	A0112Y
3 or 4	0	Non-illum, maintained	A0112X

Switch block

No of poles	Part No
Single pole	A0151BUL
Double pole	A0152BUL
Three pole	A0155BUL
Four pole	A0153BUL

UNSEALED SWITCHES (IP40) : add "01" to end of operator model number.

BI-COLOUR LED's optional.

SCREEN ENGRAVING/INSERTABLE LEGENDS: contact APEM

A0163G

Bezel: rectangular, rectangular, round, rillum' - illuminated, round, ro

G-6 www.apem.com APEM

Indicators

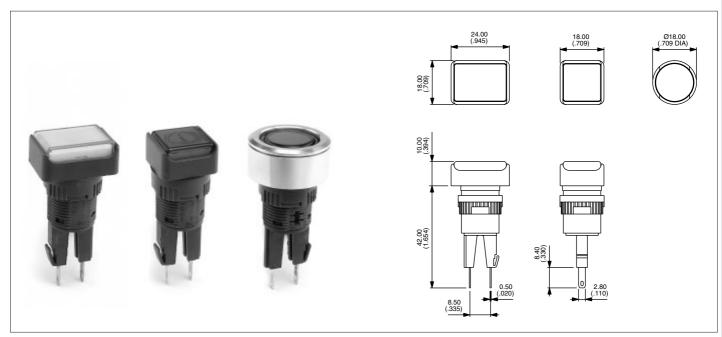
Panel cut-out Ø 16 (.630)

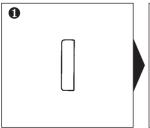
An indicator assembly requires:

screen + lamp + operator.

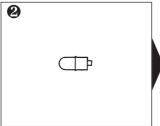
To order these elements, select desired model numbers from tables below.

Example: IP65 rectangular indicator with red screen and 12V red LED = A0161B, A0142M1 and A0171.

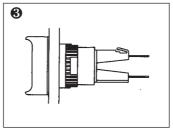




Screen



Lamp



Bezel	Colour	Part No
	black	A0161A
	red	A0161B
	amber	A0161C
	yellow	A0161D
	green	A0161E
	Ы́ие	A0161F
	clear	A0161G
	white	A0161J
	black	A0162A
	red	A0162B
	amber	A0162C
	yellow	A0162D
	green blue	A0162E
	blue	A0162F
	clear	A0162G
	white	A0162J
0	black	A0163A
0	red	A0163B
0	amber	A0163C
0	yellow	A0163D
0	green blue	A0163E
0		A0163F
0	clear	A0163G
_	1	401/01

white

	•	
Lamp	Voltage	Part No
ed .	(0) (401414
Filament	6.3V	A0141A
Filament	14V	A0141B
Filament	28V	A0141C
Filament	36V	A0141D
Filament	48V	A0141E
Filament	60V	A0141F
Neon	110V	A0143G
Neon	220V	A0143H
LED	6V red	A0142L1
LED	6V green	A0142L2
LED	6V amber	A0142L3
LED	12V red	A0142M1
LED	12V green	A0142M2
LED	12V amber	A0142M3
LED	12V blue	A0142M4
LED	12V white	A0142M5
LED	24V red	A0142N1
LED	24V green	A0142N2
IFD	24V amber	A0142N3
IFD	24V blue	A0142N4
LED	24V white	A0142N5
IFD	48V red	A0142P1
IFD	48V green	A0142P2
IFD	48V amber	A0142P3
LLD	-0 v dilibel	7014713

Operator	
D	D .

Bezel	Description	Part No	
	Indicator	A0171	
	Indicator	A0172	
0	Indicator	A0173	

UNSEALED INDICATORS (IP40): add "01" to end of operator model number.

SCREEN ENGRAVING / INSERTABLE LEGENDS: contact APEM

Rotary lever switches

Panel cut-out Ø 16 (.630)

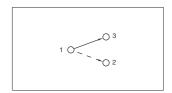
A rotary lever switch assembly requires:

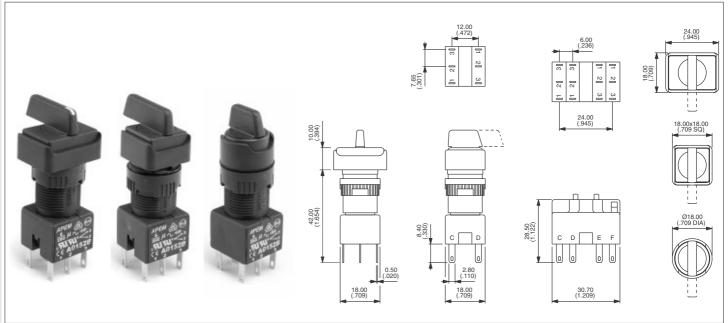
operator + switch block.

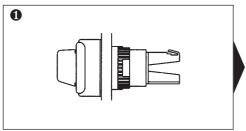
To order these elements, select desired model numbers from tables below.

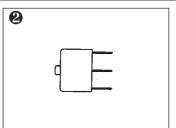
Example: IP65 rectangular rotary switch with long lever, clockwise rotation, single pole,

2 positions, maintained = A019109 and A0151BUL.









Operator

Short lever Long lever

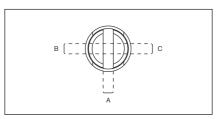
Pole Bezel Description

1 or 2		2 pos. maintained	A019209	A019109•
1 or 2		2 pos. momentary	A019210	A019110•
3 or 4		2 pos. maintained	A019211	A019111•
3 or 4		2 pos. momentary	A019212	A019112•
1 or 2		3 pos. maintained	A019205	A019105
1 or 2		3 pos. momentary	A019206	A019106
1 or 2		3 pos. mainL, momR	A019207	A019107
1 or 2		3 pos. momL, mainR	A019208	A019108
1 or 2		2 pos. maintained	A019409	A019309•
1 or 2		2 pos. momentary	A019410	A019310•
3 or 4		2 pos. maintained	A019411	A019311•
3 or 4		2 pos. momentary	A019412	A019312•
1 or 2		3 pos. maintained	A019405	A019305
1 or 2		3 pos. momentary	A019406	A019306
1 or 2		3 pos. mainL, momR	A019407	A019307
1 or 2		3 pos. momL, mainR	A019408	A019308
1 or 2	0	2 pos. maintained	A019609	A019509•
1 or 2	0	2 pos. momentary	A019610	A019510•
3 or 4	0	2 pos. maintained	A019611	A019511•
3 or 4	0	2 pos. momentary	A019612	A019512•
1 or 2	0	3 pos. maintained	A019605	A019505
1 or 2	0	3 pos. momentary	A019606	A019506
1 or 2	0	3 pos. mainL, momR	A019607	A019507
1 or 2	0	3 pos. momL, mainR	A019608	A019508

Switch block

No of poles	Part No
•	
Single pole	A0151BUL
Single pole Double pole	A0152BUL
Three pole	A0155BUL
Four pole	A0153BUL

Lever Positions



• Lever Rotation - 2 position switches

The model numbers shown are for switches with clockwise lever rotation. For anticlockwise rotation, replace:

09	with	01
10	with	02
11	with	03
12	with	04

at the end of the model number.

Optional Engraving on Lever end

See above photo left. To order, add "WL" to the end of the operator part No.

Example: A019609WL..

'mainL' - maintained left, o round, 'pos' - position, 'momR' - momentary right, etc

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Keylock switches

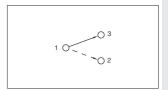
Panel cut-out Ø 16 (.630)

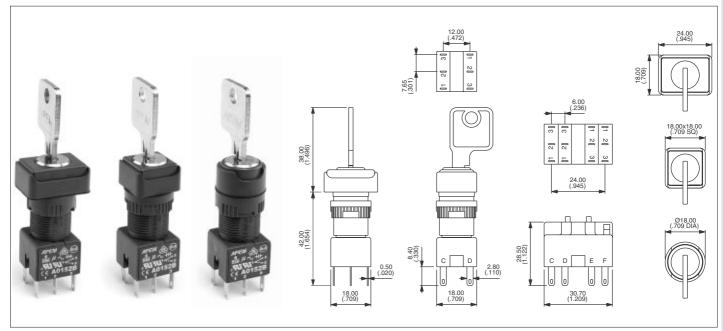
A keylock switch assembly requires :

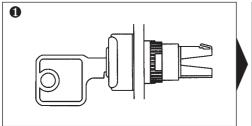
operator + switch block.

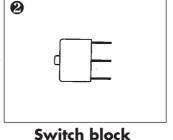
To order these elements, select desired model numbers from tables below.

Example: IP65 rectangular keyswitch, clockwise rotation, single pole, 2 positions, maintained = A018125 and A0151BUL.









Operator

A018105

A018106

A018107

A018108

A018223

A018225•

A018224 • A018227 •

A018228•

A018205

A018206

A018207

A018208

A018323

A018325•

A018324•

A018327 •

A018328 •

A018305

A018306 A018307 A-B-C

A-B

A-C

A-B

A A-B

A-B-C

A-B

A-B

A-B-C

A-B

Pole Bezel Description

3 or 4 \square

3 or 4 \square

1 or 2 \square

1 or 2 \square

1 or 2 \square

1 or 2 □

1 or 2 □ 3 or 4 □

3 or 4 □

1 or 2 \Box

1 or 2 □

1 or 2 \square

1 or 2 \square

1 or 2 O

1 or 2 O

1 or 2 O

3 or 4 O

3 or 4 o

1 or 2 o

1 or 2 o

1 or 2 o

1 or 2 □

1 or 2 2 pos. maintained
1 or 2 2 pos. maintained
1 or 2 2 pos. momentary

2 pos. maintained

2 pos. momentary

3 pos. maintained

3 pos. momentary

3 pos. mainL, momR

3 pos. momL, mainR

2 pos. maintained

2 pos. maintained

2 pos. momentary 2 pos. maintained

2 pos. momentary

3 pos. maintained

3 pos. momentary

3 pos. mainL, momR

3 pos. momL, mainR

2 pos. maintained

2 pos. maintained

2 pos. momentary

2 pos. maintained

2 pos. momentary

3 pos. maintained

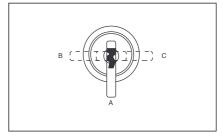
3 pos. momentary

3 pos. mainL, momR

3 pos. momL, mainR

Part No Key removable	No of poles	Part No
A018123 A A018125• A-B	Single pole Double pole Three pole	A0151BUL A0152BUL
A018124• A A018127• A-B A018128• A	Four pole	A0155BUL A0153BUL

Key Positions



• Key Rotation - 2 position switches

The model numbers shown are for switches with clockwise key rotation.

For anticlockwise rotation, replace:

25	with	01
24	with	02
27	with	03
28	with	04

at the end of the model number.

2 standard keys are supplied. 20 key barrel types available from stock.

NON-REMOVABLE KEY POSITIONS / ON-ON-ON FUNCTION: contact APEM.

Bezel: \square rectangular, \square square, \circ round,

'pos' - position, 'mainL' - maintained left, 'momR' - momentary right, etc

Emergency stop switches

Panel cut-out Ø 16 (.630)

- Prominent 24 mm (.944) dia. or optional 40 mm (1.575) dia. red mushroom actuator
- Highly reliable positive break switch
- Push to shut off switch, twist to reset to ON
- Approved to UL 1054 / EN 60947-5-1

An emergency stop switch assembly requires: operator + switch block. To order, specify with single pole or double pole positive break switch block.

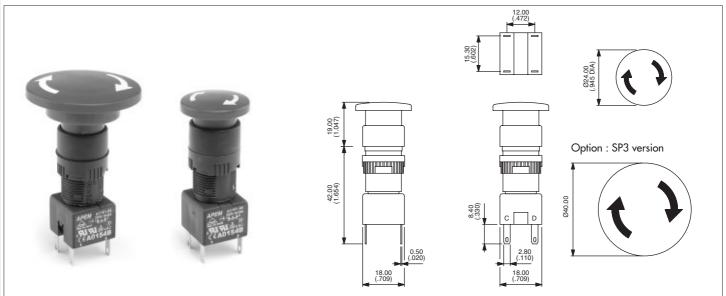
N.C.

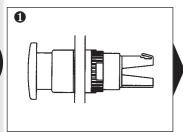
General specifications

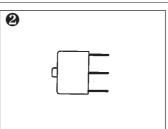
- Min. mechanical life: 6.050 cycles (6 cycles per minute)
- Operating force / torque : 16 N / 0,1 Nm
- Operating temperature : -20°C to +55°C
- Solder heat resistance: 350°C, 5 secs (IEC 68-2-2-20Tb, method 2)
 Degree of environmental protection (IEC 529):
- IP65 front of panel, IP40 back of panel
- Switch terminals: solder/quick-connect 2,8 mm (.110) (IEC 68-2-20)

Electrical specifications

- Current/voltage rating : 1,5A 250VAČ AC-15
- Contact gap : > 3 mm (.118)
- Dielectric strength: 2.900V
- Electrical life: 6.050 cycles









60 mm Ø Self **Adhesive Label** Part No

Description Yellow label with text A01YL1 Yellow label A01YL2

Operator

Description	Part No
·	
24 mm Ø Emergency stop	A01ES
40 mm Ø Emergency stop	A01ES SP3

Switch block

No of poles	Part No
•	
C:ll.	A0150BUL
Single pole	
Double pole	A0154BUL

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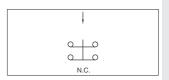
Emergency stop switches/mushroom head pushbutton switches

Fitted in enclosures

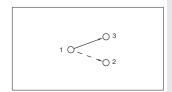
- Prominent 40 mm (1.575) dia. mushroom actuator, twist to release
- Highly reliable positive break switching on E-Stop
- Sealed to IP65
- 6A current rating
- Robust polycarbonate enclosures
- Knockouts for popular conduit sizes
- Double pole changeover switch blocks available for momentary/maintained mushroom head pushbuttons.

Technical specifications

- Contact rating: Pushbutton switch: 6A 250VAC E-Stop: 1,5A 250VAC
- Dimensions : 65 x 65 x 57 mm
- Electrical life: Pushbutton switch: 50 000 cycles E-Stop: 6 050 cycles
- Operating temperature : -20°C to +55°C



Emergency stop



Momentary & maintained



Description	Part No
'	
Emergency stop	A01ESSP354B + PEA01
Black momentary	A01MMASP352B + PEA01
Red momentary	A01MMBSP352B + PEA01
Yellow momentary	A01MMDSP352B + PEA01
Green momentary	A01MMESP352B + PEA01
Blue momentary	A01MMFSP352B + PEA01
Black maintained	A01MXASP352B + PEA01
Red maintained	A01MXBSP352B + PEA01
Yellow maintained	A01MXDSP352B + PEA01
Green maintained	A01MXESP352B + PEA01
Blue maintained	A01MXFSP352B + PEA01

OPTIONS

12A 250V versions or custom printing on mushroom head actuators: contact APEM.

APEM www.apem.com G-11

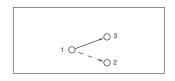
Mushroom head pushbutton switches

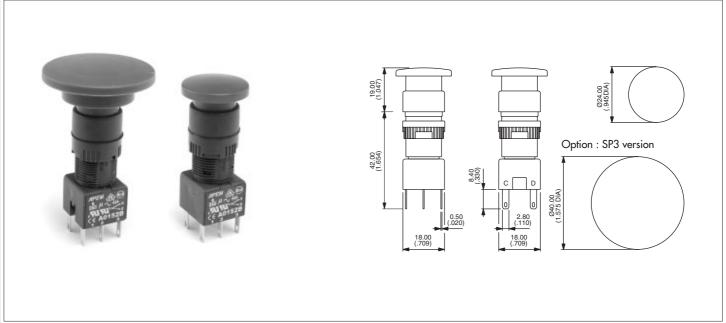
Panel cut-out Ø 16 (.630)

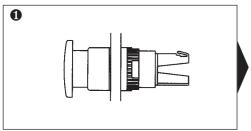
- Prominent 24 mm (.944) dia. or optional 40 mm (1.575) dia. mushroom actuators
- Momentary and maintained functions
 Momentary function versions are unmarked.

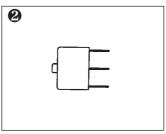
 Maintained function versions are twist release (arrows indicate direction of twist)











Operator

Actuator	Description	Part No
	•	
24mmØ	Black momentary	A01MMA
24mmØ	Red momentary	A01MMB
24mmØ	Yellow momentary	A01MMD
24mmØ	Green momentary	A01MME
24mmØ	Blue momentary	A01MMF
24mmØ	Black maintained	A01MXA
24mmØ	Red maintained	A01MXB
24mmØ	Yellow maintained	A01MXD
24mmØ	Green maintained	A01MXE
24mmØ	Blue maintained	A01MXF
40mmØ	Black momentary	A01MMA SP3
40mmØ	Red momentary	A01MMB SP3
40mmØ	Yellow momentary	A01MMD SP3
40mmØ	Green momentary	A01MME SP3
40mmØ	Blue momentary	A01MMF SP3
40mmØ	Black maintained	A01MXA SP3
40mmØ	Red maintained	A01MXB SP3
40mmØ	Yellow maintained	A01MXD SP3
40mmØ	Green maintained	A01MXE SP3
40mmØ	Blue maintained	A01MXF SP3

Switch block

140 of poles	FULLINO
•	
Single pole	A0151BUL
Double pole	A0152BUL
Three pole	A0155BUL
Four pole	A0153BUL

C

G

A1-A01 series

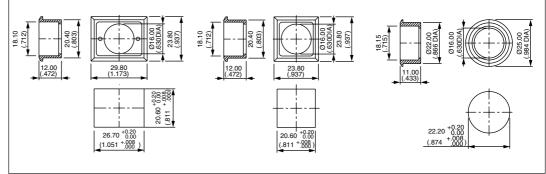
Industrial controls

Accessories

FLUSH MOUNTING BEZELS

Dark grey plastic material - supplied with sealing washer





Rectangular A01FM1

Square A01FM

Round A01FM2

A01PC1

A01PC2

A01PC3

A01PC4

A01PC5

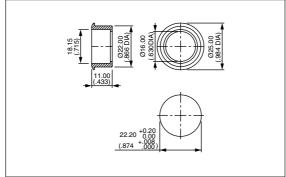
A01PC6

A01PC7

FLUSH MOUNTING BEZELS



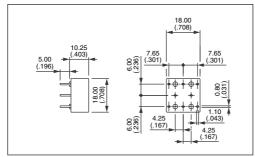




Round, anodised aluminium A01FMM
Round, matt black A01FMMG

PCB SOCKET

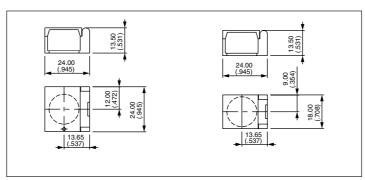




Single pole, non illuminated Double pole, non illuminated Single pole, illuminated Double pole, illuminated Indicator Single pole, E-stop Double pole, E-stop

FLAPGUARDS





Rectangular A01FG1

Square/round A01FG2

APEM www.apem.com G-13

A1-A01 series

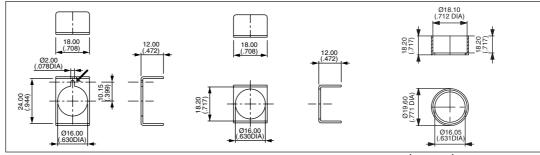
Industrial controls

Accessories

METAL GUARDS

→ Slot as alternative to Ø 2 mm hole - Material : 1 mm thick aluminium.





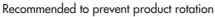
Rectangular A01MG1

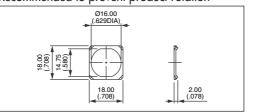
Square A01MG

Round, natural A01MG2 Matt black A01MG2G

ANTI ROTATION RING



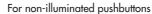




A01LW

ALUMINIUM SCREENS



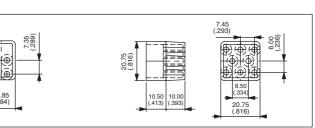




SWITCHBLOCK TERMINAL GUARDS



A0163AL





2 way **A01RTC2**

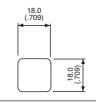
8 way A01RTC8

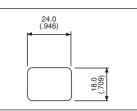
A0163AL1

BLANKING PLUGS



Ø18.0 (.709 DIA)



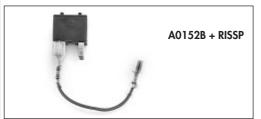


Round A0133

Square A0132

Rectangular A0131

RESISTOR ASSEMBLY



Resistor assembly - 2 stage illumination



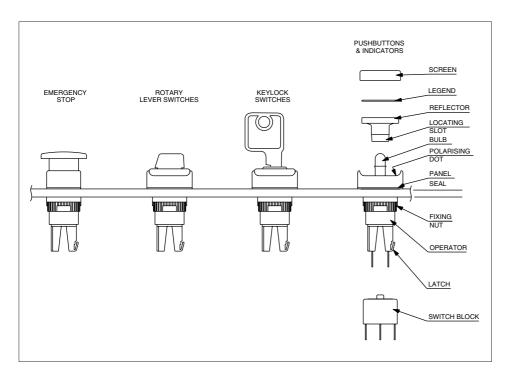
G-14 www.apem.com **APEM**

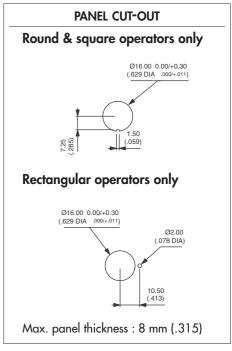
A1-A01 series

Industrial controls

Installation - tools

Modular construction / panel mounting





PANEL MOUNTING ASSEMBLY

- Drill/punch hole shaped as above.
- Assemble front operator through hole, fit fixing nut and tighten to a maximum torque of 0,8Nm using tool No 30-0001.
- Wire chosen switch block as required and slide onto operator until latch engages.
- Fit bulb if required using tool No 30-0002.
- Snap screen onto reflector assembly with legend in between if required and snap onto front operator TAKING CARE TO LINE UP THE LOCATING SLOT WITH THE POLARISING DOT, and not to damage the seal.

TO REMOVE BULB

Remove reflector/screen assembly. Use the bulb extractor 30-0002 to remove the bulb.

SWITCH BLOCK

To assemble switch block to front operator, TAKE CARE TO LINE UP SWITCH BLOCK WITH FRONT OPERATOR. Once in position, slide on to front operator. NB.: Ensure latch is fully engaged correctly onto the switch block.

To remove switch block, depress the latch and slide the switch block off the operator.

FIXING NUT KEY



BULB REMOVER



APEM www.apem.com G-15